

ACTION 5

Protect, restore, and enhance intertidal and subtidal habitats

Protect, restore, and enhance intertidal and subtidal habitats to improve delivery of ecosystem services and water quality benefits to the Estuary. Consider connections between habitats within the full range of tidal elevations, from upland to subtidal, striving to protect and restore complete systems.

TASK 5-1 Increase populations of native eelgrass (*Zostera marina*) by expanding the extent of existing beds or establishing new beds on the bay floor.

BY 2021 Increase eelgrass coverage in the Bay by 25 acres.

TASK 5-2 Increase populations of native oysters (*Ostrea lurida*) by expanding the extent of existing beds or establishing new beds on the bay floor.

BY 2021 Increase native oyster bed coverage in the Bay by 25 acres.

TASK 5-3 Restore intertidal and subtidal habitats other than eelgrass and oyster beds, such as rocky intertidal, sandy beach, and macroalgal beds. Identify appropriate and feasible sites, secure funds, and implement projects to create or improve these types of habitats as well as projects that integrate multiple habitats.

BY 2021 Implement five projects in the Bay that focus on rocky intertidal, sandy beach, macroalgal bed, living shorelines, or other integrated habitats.

BACKGROUND

Intertidal and subtidal habitats are productive and important components of the Estuary ecosystem. Intertidal habitats can include oyster and eelgrass beds, mudflats, rocky areas, sandy beaches, macroalgal beds, and wetlands.

Eelgrass enriches the Estuary in many ways. Growing in underwater meadows, it provides shelter and food for many species of birds, and attracts small fish, crabs, and other aquatic life. Spawning herring favor eelgrass over other surfaces to attach their eggs. Eelgrass beds also dampen waves, slow currents, trap sediment, reduce turbidity, and protect shoreline areas from erosion.

Shellfish beds also enrich the Estuary and provide ecosystem services. Native Olympia oysters are a “foundation species,” building habitat by increasing bottom roughness, reducing the speed of currents, and as a result, trapping sediments. In contrast to other adjacent, less complex habitats, the presence of native oyster beds can

locally increase the number of other benthic invertebrates, as well as the abundance and diversity of fish.

These and other intertidal Bay habitats — including mudflats, marshes, and saline ponds — are used by over one million shorebirds each year (>300,000 in winter). The 2015 *State of the Estuary Report* found the status of large and medium shorebirds to be poor, and of small shorebirds to be fair. Ongoing monitoring is needed to better understand whether observed changes represent changes in wintering abundance or shifts in bird distribution.

This CCMP action also supports restoration goals in the 2010 *San Francisco Bay Subtidal Habitat Goals Report (Subtidal Goals Report)*. The *Subtidal Goals Report* recommends increasing eelgrass and oyster populations in the Bay within 8,000 acres of suitable area over a 50-year time frame. The report also recommends a phased approach under a program of adaptive management, with benchmarks to increase eelgrass and oyster coverage by 25 acres within 5 years, 100 acres within 10 years, and up to 8,000 acres within 50 years. The *Subtidal Goals Report* also contains goals for other intertidal and subtidal habitats, as well as for the use of soft structures and incorporation of living materials into shoreline protection schemes, or “living shorelines.”

On an ecosystem level, this CCMP action also supports the restoration of tidal wetlands as part of a dynamic continuum of habitats connected by physical and biological processes. This continuum extends from the open waters of the Bay through intertidal mudflats and tidal marshes, and up into creek mouths and adjacent terrestrial areas. Although CCMP Actions 3-8 include specific milestones for individual habitat types, these and other actions also recognize the importance of connecting the full gradient of ecological functions and ecosystem services in complete tidal wetland systems.

OWNERS

CA State Coastal Conservancy (Tasks 5-1, 5-2, 5-3)
NOAA Fisheries (Task 5-1)

COLLABORATING PARTNERS

CA Department of Fish and Wildlife, National Oceanic and Atmospheric Administration, Romberg Tiburon Center, SF Bay Joint Venture, SF Bay National Estuarine Research Reserve, Smithsonian Environmental Research Center, US Fish & Wildlife Service SF Bay National Wildlife Refuge Complex

NEXUS

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